Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	616	702/14.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/07 14:51
L2	73	702/14.ccls. and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/07 14:51
L3	10	702/14.ccls. and (time adj shift) and anisotropy	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/07 14:52
S1	87	seismic and (time adj shift) and (time adj window)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/07 14:51
S2	15	seismic and (time adj shift) and (time adj window) and anisotropy	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/07 11:15
S3	176	367/40.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/20 15:15
S4	103	367/46.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/20 15:15
S5	74	367/51.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 11:35
S6	130	367/50.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/20 15:40
S7	69	"367"/$ and azimuth$ and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/20 16:24
S8	4	("5260968" | "5671344" | "RE38229" | "6708118" | "2003/0023383" | "2003/0200092"). PN.	USPAT	OR	ON	2004/09/20 15:42
S9	0	"6791900".URPN.	USPAT	OR	ON	2004/09/20 15:42

S10	54	(seismic same trace) and (cross-correlat$ same (time adj shift))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/20 16:57
S11	6	"367"/$.ccls. and (cross-correlat$) and (time adj shift) and anisotropy	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/20 16:58
S12	182	367/27.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 09:52
S13	7	367/27.ccls. and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 09:55
S14	13	367/57.ccls. and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 09:59
S15	11	367/54.ccls. and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 09:59
S16	14	(("5,508,973") or ("5,532,978") or ("5,737,220") or ("5,764,516") or ("5,933,789") or ("6,061,301") or ("6,263,284")).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2004/09/21 11:35
S17	411	azimuth and amplitude and (least adj squares)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 11:52
S18	54	azimuth and (amplitude same (least adj square$))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 13:18
S19	8	(time adj shift) and (velocit$ adj anisotrop$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 13:55
S20	49	(time adj shift) and (amplitude same azimuth$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 13:56
S21	6	"6263284"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 15:11

S22	76	367/50,51.ccls. and amplitude	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 15:30
S23	0	367/54.ccls and amplitude and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 15:31
S24	7	367/54.ccls. and amplitude and (time adj shift)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 15:31
S25	15	"4206509"	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/21 16:00
S26	3066	(seismic and (trace or gather))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/22 09:56
S27	6	((seismic and (trace or gather))) and (time adj shift) same (azimuth$) same (amplitud$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/22 09:57
S28	22	(("6760667") or ("US20030208321") or ("6430508") or ("6026059") or ("6263284") or ("6128580") or ("6058074") or ("5999486") or ("5784334") or ("5508973") or ("4967401") or ("4779237")).PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	OFF	2004/09/22 13:09
S29	6	seismic and (time near5 shift$) and (AVV or AVOA or AVA)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/22 13:10
S30	9	(time adj shift) near8 (least adj square$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2004/09/22 14:41
S31	122	367/57.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/06 15:34
S32	4	(time adj shift) same (velocity adj anisotrop$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/06 15:36
S33	8	(time adj shift) and (velocity adj anisotrop$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/06 15:44

S34	12	(time adj shift) and (weathering adj layer)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/06 16:27
S35	13	(time adj shift) same (anisotrop$)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/06 16:27
S36	4	seismic and ((time adj shift) same anisotropy) and (time adj window)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/01/07 11:16

---

1 / 7 TULSA - ©TULS

TI - ESTIMATION OF **TIME SHIFT** CAUSED BY SUBSURFACE **VELOCITY ANISOTROPY**

AU - JENNER, E L; WILLIAMS, M C

SO - GR BRIT 2,377,495A, P 2003.01.15, F 2002.05.14, PR US 2001.05.15 (APPL 855,925) (G01V-001/28) (38 PP; 26 CLAIMS)

AB - A method comprises a system for processing seismic data to estimate **time shift** resulting from **velocity anisotropy** in the earth's subsurface. A gather of seismic data traces is formed and selected seismic data traces included in the gather within selected time windows are cross-correlated to estimate the **time shift** in the seismic data traces included in the gather resulting from **velocity anisotropy** in the earth's subsurface. The **time shift** data can then be used to correctly align gather traces for improved AVO analysis, or to highlight geological features such as vertically aligned fractures.

---

2 / 7 TULSA - ©TULS

TI - 3-D CONVERTED SHEAR WAVE ROTATION WITH LAYER STRIPPING

AU - GAISER, J E

SO - US 5,610,875, C 97.03.11, F 95.09.29 (APPL 536,429) (G01V-001/00; G01V-001/36) (8 PP; 6 CLAIMS)

AB - A method is described for using a compressional-wave source to produce converted shear waves which are subjected to Alford 4-component rotation to align the observation coordinates with the natural coordinates of the principal anisotropic axes of a birefringent formation. The static **time shift** between the fast and the slow shear wavefields due to shear-wave splitting is determined so that they can be synchronized to isotropize the birefringent formation. From those data, fracture-plane orientation can be determined. Based on those data, the direction of a deviated borehole is aligned perpendicular to the fracture plane strike. For a deep-seated target formation, shallower layers are isotropized prior to rotation and synchronization of the converted shear wavefields originating from that deeper formation.

---

3 / 7 TULSA - ©TULS

TI - BIREFRINGENCE STUDY ON 3-C/2-D: BARINAS BASIN (VENEZUELA)

AU - DONATI, M S; BROWN, R J

SO - 65TH ANNU SEG INT MTG (HOUSTON, 95.10.08-13) EXPANDED TECH PROGRAM ABSTR BIOGR PP 723-726, 1995 (PAP NO PP6 7; 7 REFS; ABSTRACT ONLY) (AO)

AB - P-SV data from the Barinas Basin (Venezuela) was processed with the goal of estimating the birefringence effect caused by an anisotropic layer. The target zone is a fractured carbonate reservoir at 3,000 m located in SW. Venezuela. The time lag between fast and slow S-waves (S-wave splitting) and the angle between line azimuth and orientation of the natural coordinates are determined using the Harrison rotation method based upon a modeling of the cross correlation function between rotated radial and transverse field components. Due to the small statics observed on the brute stacks of radial and transverse components, the **time shift** could be associated with splitting effects due to the carbonate reservoir in this area. (Longer abstract available) (Original article not available from T.U.)

---

4 / 7 TULSA - ©TULS

TI - STRUCTURAL IMAGING IN THE REAL WORLD

AU - JOHNSON, J D

SO - LEADING EDGE (GEOPHYS EXPLOR) V 11, NO 1, PP 32-36, JAN 1992

AB - SIGNIFICANT ADVANCES IN SEISMIC IMAGING/INVERSION DURING THE LAST FEW YEARS HAVE IMPROVED THE ABILITY TO MAP COMPLEX STRUCTURES. TWO-DIMENSIONAL POSTSTACK DEPTH MIGRATION HAS BEEN AVAILABLE TO EXPLORATIONISTS FOR OVER 10 YR, AND 3-DIMENSIONAL POSTSTACK AND 2-DIMENSIONAL PRESTACK DEPTH MIGRATION HAVE BECOME ROUTINELY AVAILABLE TO COMPANIES WITH SUFFICIENT COMPUTATIONAL RESOURCES. SEVERAL ALTERNATIVE ALGORITHMIC APPROACHES HAVE BEEN DEVELOPED THAT SUCCESSFULLY ACCOMPLISH INVERSE PROPAGATION OF ACOUSTIC WAVES THROUGH HETEROGENEOUS MEDIA. ACCURATE METHODS THAT CAN HANDLE STEEP DIP AND LARGE LATERAL VELOCITY CHANGES INCLUDE FREQUENCY-DOMAIN APPROACHES (SUCH AS F-X SUMMATION AND PHASE **SHIFT** PLUS INTERPOLATION) AND **TIME**-DOMAIN APPROACHES (SUCH AS REVERSE TIME AND KIRCHHOFF WITH ACCURATELY COMPUTED TRAVELTIMES). ALTHOUGH PARTICULAR IMPLEMENTATIONS OF EACH METHOD HAVE CONTRASTING ADVANTAGES AND DISADVANTAGES, THE PROBLEM OF SIMULATING ACOUSTIC WAVE PROPAGATION IS ESSENTIALLY SOLVED FOR USERS OF STATE-OF-THE-ART IMAGING TECHNOLOGY WHICH, FOR THE PURPOSE OF THIS DISCUSSION, IS 2-DIMENSIONAL PRESTACK DEPTH MIGRATION. ASPECTS OF THESE PROBLEMS ARE DESCRIBED AND A FEW APPROACHES TO SOLUTIONS ARE SUGGESTED.

---

5 / 7 TULSA - ©TULS

TI - METHOD OF LAYER STRIPPING TO DETERMINE FAULT PLANE STRESS BUILD-UP

AU - WINTERSTEIN, D F

SO - US 5,060,204, C 91.10.22, F 90.06.27 (APPL 545,030) (G01V-001/36; G01V-001/40) (30 PP; 16 CLAIMS)

AB - A METHOD FOR ANALYZING SEISMIC SHEAR WAVE DATA USES A LAYER STRIPPING TECHNIQUE TO DETERMINE FAULT PLANE STRESS BUILD- UP. POLARIZATION DIRECTIONS OF SHEAR WAVE DATA, FROM EITHER A VERTICAL SEISMIC PROFILE OR FROM SURFACE REFLECTION DATA, ARE ANALYZED, AND TIME LAGS BETWEEN FAST AND SLOW SPLIT SHEAR WAVES ARE DETERMINED. NATURAL POLARIZATION DIRECTIONS OF AND TIME LAGS BETWEEN THE SPLIT SHEAR WAVES IN AN UPPER LAYER ARE DETERMINED ABOVE THE SHALLOWEST DEPTH WHERE DATA CUES SUGGEST POLARIZATION CHANGES TAKE PLACE. SOURCE AND RECEIVER AXES OF THE DATA BELOW THE DEPTH OF POLARIZATION CHANGES ARE ROTATED BY AN AZIMUTH ANGLE, TO BRING THE AXES INTO PROPER ALIGNMENT. A STATIC **TIME SHIFT** IS THEN APPLIED TO ELIMINATE THE TIME LAG IN THE UPPER LAYER ABOVE THE DEPTH WHERE POLARIZATION CHANGES WERE INDICATED.

---

6 / 7 TULSA - ©TULS

TI - METHOD OF LAYER STRIPPING TO PREDICT SUBSURFACE STRESS REGIMES

AU - WINTERSTEIN, D F

SO - US 5,060,203, C 91.10.22, F 90.06.26 (APPL 543,994) (G01V-001/36; G01V-001/40) (26 PP; 16 CLAIMS)

AB - A METHOD FOR ANALYZING SEISMIC SHEAR WAVE DATA USES A LAYER STRIPPING TECHNIQUE TO PREDICT SUBSURFACE STRESS REGIMES. POLARIZATION DIRECTIONS OF SHEAR WAVE DATA, FROM EITHER A VERTICAL SEISMIC PROFILE OR FROM SURFACE REFLECTION DATA, ARE ANALYZED, AND TIME LAGS BETWEEN FAST AND SLOW SPLIT SHEAR WAVE ARE DETERMINED. NATURAL POLARIZATION DIRECTIONS OF AND TIME LAGS BETWEEN THE SPLIT SHEAR WAVES IN AN UPPER LAYER ARE DETERMINED ABOVE THE SHALLOWEST DEPTH WHERE DATA CUES SUGGEST POLARIZATION CHANGES TAKE PLACE. SOURCE AND RECEIVER AXES OF THE DATA BELOW THE DEPTH OF POLARIZATION CHANGES ARE ROTATED BY AN AZIMUTH ANGLE, TO BRING THE AXES INTO PROPER ALIGNMENT. A STATIC **TIME SHIFT** IS THEN APPLIED TO ELIMINATE THE TIME LAG IN THE UPPER LAYER ABOVE THE DEPTH WHERE POLARIZATION CHANGES WERE INDICATED.

---

7 / 7 TULSA - ©TULS

TI - A FREQUENCY-DOMAIN METHOD FOR **TIME-SHIFT** ESTIMATION AND ALIGNMENT OF SEISMIC SIGNALS

AU - SIMAAN, M

SO - IEEE TRANS GEOSCI REMOTE SENSING V GE-23, NO 2, PP 132-138, MARCH 1985

AB - ALIGNMENT OF SEISMIC SIGNALS USING TIME SHIFTS OBTAINED FROM FIRST BREAKS OR THROUGH CROSS-CORRELATION TECHNIQUES IN THE TIME DOMAIN WITHOUT INTERPOLATION CAN ONLY BE DONE TO WITHIN AN INTEGER MULTIPLE OF THE SAMPLING PERIOD. IN MOST SEISMIC APPLICATIONS, THE ACCURACY OF SUCH TECHNIQUES IS NOT SUFFICIENT. ON THE OTHER HAND, ALIGNMENT BETWEEN ONLY 2 SIGNALS CAN BE ACHIEVED TO WITHIN A FRACTION OF THE SAMPLING PERIOD BY FITTING A PARABOLA TO THE CROSS- CORRELATION PEAK. IN THIS PAPER, A NEW ALIGNMENT PROCEDURE IS PRESENTED IN WHICH THE TIME SHIFTS NECESSARY TO ALIGN SIMULTANEOUSLY AN ENSEMBLE OF SIGNALS ARE DETERMINED THROUGH A PARAMETER-OPTIMIZATION PROBLEM IN THE DISCRETE-FREQUENCY DOMAIN. A COMPARISON OF THIS PROCEDURE WITH THE PARABOLIC FIT PROCEDURE IS PERFORMED ON SYNTHETIC DATA WITH VARIOUS LEVELS OF SIGNAL-TO-NOISE RATIOS. THE EFFECTIVENESS OF THIS TECHNIQUE IS DEMONSTRATED ON A REAL VERTICAL SEISMIC DATA SET. (21 REFS.)

Search statement 2